SYMONS'S
MONTHLY
METEOROLOGICAL MAGAZINE.

CXII.] MAY, 1875. [PRICE FOURPENCE or 5s. per ann. post free,

GREAT VARIATION OF SHADE TEMPERATURE, APRIL 21ST.

THE range of temperature in the spring is usually greater than that in any other season, if therefore, its normally large amount is abnormally increased, it becomes sufficiently marked to attract the attention of others besides meteorologists.

A case of this kind occurred on April 21st, when a northerly wind passed down over England. The following information is afforded by the Daily Weather Reports.

(1.) At Thurso the change had occurred, a fresh N.N.E. wind was blowing, and the temperature was down to 40° at 8 a.m., on 21st.

(2.) At Scarborough, at the same hour, the N. wind had just commenced, but was very slight, the weather was foggy and the temperature was 46° and falling.

(3.) At all stations south of Scarborough the morning was fine, the wind southerly or else calm, the temperature above 50°, and rising rapidly.

(4.) Between 11 a.m. and noon the N. wind reached Nottingham, and the temperature fell 16° in that hour.

(5.) The "Summary of the Weather in Western Europe," is as follows:—

April 21st.—The mercury had fallen at the Irish, English and French stations and on the eastern shores of the North Sea, and the area of lowest pressure had advanced over the south of Sweden, where the barometer had fallen more than half-an-inch. At the same time a recovery had commenced in the north of Scotland, so that the gradient from Aberdeen to Wisby was 0·05 in. Moderate to fresh breezes were reported, from N.E. over Scotland and from N.W. over Norway, while the W. wind in Denmark and the S.E. wind in the south-west still held. Elsewhere calms or variable airs prevailed. Temperature had fallen considerably in the north under the influence of the N. wind, while it had again risen in the south-east, and was unchanged elsewhere. The weather had become overcast in the north and west with snow at Christiansund and rain at Roches Point and Brest, but in the south-east the sky continued clear. As the day advanced the N.E. wind and cloudy weather extended S., accompanied by a very rapid fall of temperature, and in the evening heavy rain fell in the south-east of England.

We may now add a few letters and notes which we have received and which tend to complete the above records. We arrange them in the order in which the wind reached the stations.

Killingholme, Lincolnshire.—Temperature fell from 65° to 48° in the forenoon of 21st.—J. BYRON.

Mansfield.—At 9 a.m. the thermometer stood at 65°·6, wind S.W., the wind gradually shifted by W., N.W., N. to N.E., at 12.30 (noon), the thermometer falling 20°·5 during that time; at 9 p.m. it stood at 40°·3.—R. TYRER.

Coston.—Very sudden change of temperature, about 12·30 (noon), the wind changed from S. to N., the sky became overcast with threatening looking thunder clouds, temperature fell rapidly, and gusts of wind blew the dust along the roads.—A. M. RENDELL.

To the Editor of the Meteorological Magazine.

SIR,—Is it not but seldom, even in our changeable climate, that we have so great a variation in the shade temperature as was registered here during the 24 hours, ending at 3 p.m. on April 21st? Thus, temperature fell during 14 hours, ending 5 a.m., on 21st, from 71° to 35° = range of 36°, rose in 6 hours ending 11 a.m., from 35° to 72° = ditto 37°, fell in 4 hours, ending 3 p.m., from 72° to 51° = ditto 21°, making a total variation in 24 hours of 94°.

Will any readers of the Meteorological Magazine kindly point out any similar instances of such sudden and extensive changes of shade temperature.

I am, Sir, yours truly,

G. WARREN.

Merton Villa, Cambridge, April 22th.

Addington Manor, Winslow.—Wind west till 3 p.m., then changed very suddenly to N.E.—J. MATHISON.

To the Editor of the Meteorological Magazine.

SIR,—A most remarkable change of temperature and weather occured yesterday.

At 9 a.m. the sky was covered with cirrus, moving slowly from W.S.W., the weather being very hot and sultry, the thermometer standing at 66°·2.

During the afternoon the wind freshened from N.E., and at 6 p.m. the thermometer stood at 49°, having fallen from 70° at 2 p.m.; at 9 p.m. it had further fallen to 42°·4.

Rain commenced about 7.30 p.m. and continued steadily till 9 p.m.

At 8 a.m. this morning, a fall of frozen rain or pieces of ice commenced and lasted till 9.30 a.m.

The thermometer at 9 a.m. stood at 40°, or 26°·2 lower than at the same time yesterday

The max. yesterday was 70°·1, and to-day only 44°.

Yours truly,

THOS. PAULIN.

Enfield Chase, April 22nd, 1875.

To the Editor of the Meteorological Magazine.

SIR,—The sudden fall in temperature which occurred over the greater part of England on Wednesday, April 21st, was very rapid here.

At 4 p.m. the weather was overcast as it had been all day, and quite calm, the thermometer standing at 73° in the shade. At 5 p.m. a sudden high wind sprang up from the N.E., (the upper clouds moving from the W.) and at 6 p.m. the thermometer had fallen to 46°. The air was quite hot till 5 p.m.; but I was out, and so was not able to see the thermometer at that time, but it must have been above 70°. This would give a fall of 24° in the hour. There was no rain, except a few drops, till 7 p.m., and the wind had quite gone down at 10 p.m. The minimum next morning was 39°, giving a total fall of 34° in 17 hours. Yours truly,

W. C. HUGHES.

Sutton Valence, Staplehurst, Kent.

To the Editor of the Meteorological Magazine.

SIR,—One of the most remarkable changes of temperature which I ever recorded occurred here on Wednesday. At 9 a.m. dry bulb 62°. Dew point 46°·6. Max. for 21st was 76°·8, wind S.W. Soon after 3 p.m. wind shifted very suddely to N.N.E., with a very rapid decrease of temperature to 41°·8! by 9 p.m. At 9 a.m. of 22nd, dry bulb 38°·8. Dew point 37°·4. Wind N.E. Max. temperature (shade) on 22nd only 39°·7!! a difference of 37°·1 from the previous day. The *exposed* max. ther. was only 41°! or 1°·3 higher. During night of 21st the min. ther. was 36°·6. The weather until 18th has been cold and dry since January. This will be the latest spring since 1837.

C. L. PRINCE.

Crowborough Observatory, Tunbridge Wells, April 23rd, 1875.

We think that there are few cases in which the advance of a Polar wind has been more clearly marked, or more carefully recorded than in the above instance. It seems possible, even with the above data to approximate to its rate of southerly progress, and to fix it at from 20 to 25 miles per hour; but we think the phenomena worthy of further examination.

RAIN ON THE COTSWOLDS.

To the Editor of the Meteorological Magazine.

SIR.—We had a remarkable fall of rain for this district, on Thursday, 8th. It extended over the North Cotswolds, but not far away I believe. It began with snow, soon after midnight, turned to heavy steady rain about 2 o'clock a.m., and continued until 11 a.m., 1·60 in. fell during that time. I thought at first that my rain gauge must have been tampered with, but on going out the overflowing ditches and brooks and inundated fields showed how much had fallen.

There was no wind; but some said they heard distant thunder. We have not had such rain since I commenced observing the weather. I am, yours faithfully,

R. B. BELCHER.

Blockley, Moreton-in-Marsh, April 10th, 1875.

MOTION OF ICEBERGS.

To the Editor of the Meteorological Magazine.

SIR,—Icebergs have frequently been observed to travel in a direction different from that of the wind and also of the surface-current of the water, and their motion has in most cases been attributed to a different current of water below the surface acting on their base. In the Report of the recent Austrian Polar Expedition, the curious, and (so far as I am aware) novel observation is made that the ice in high latitudes commonly travels not exactly with the wind, but with a motion inclining from the right: thus, if the wind be S., the ice moves from a point W. of S.; if W., from a point N. of W., &c.

To the best of my knowledge no explanation of this phenomenon has yet been offered.

I hazard two suggestions for the consideration of your readers. To the first I am not inclined to attach much importance, but perhaps it ought not to be dismissed without reflection. The second appears to me to be intrinsically probable.

I. In inland localities of our own latitudes clouds at the altitude of 4000 ft. generally travel with a motion inclining from the right of the winds course, the mean angle at that elevation being about 15° with the surface wind. It seems improbable that at the summit of the highest icebergs the wind should make any noticeable angle with the wind as observed on the ship. It is, however, worth mentioning that it is characteristic of the weather within the arctic circle, as observed in the above Report and elsewhere, that very low clouds are frequently seen to travel with much velocity, when the atmosphere on the surface of the earth is calm. I have elsewhere shown a connection to subsist between the difference of direction and of velocity of the wind at, and above the earth's surface. (*Journal Scottish Meteorological Society, No.* 39). It is therefore conceivable that in those latitudes the wind, even at the slight altitude of the higher icebergs, may occasionally differ as much in direction as in velocity from the surface wind: though, if this were the case, we should expect the fact to have been otherwise noticed.

II. In a cyclonic circulation of the atmosphere the S. wind is pressed upon in the rear by a S.W., the W. by a N.W. wind, &c. It seems possible that the ice in the S. wind continues to travel from a South-westerly point, and that in the W. wind from a North-westerly point; to a slight extent, by virtue of its own inertia, in the case of very local circulations, such as attend electric showers; and to a greater extent, if closely packed, by the pressure of the ice moving in its rear, even when the wind-curve has a large radius.

In our own latitudes a S. wind not uncommonly has a S.E. wind in its rear, a W., a S.W., &c. But it is remarkable that these "anti-cyclonic" wind-curves diminish in frequency, both in Europe and America, as we get into higher latitudes.

It is to be hoped that this subject will receive further investigation in the Arctic Expedition, and that the direction taken by the ice will be carefully compared not only with that of the wind, but with other meteorological conditions existing at the time.

Yours truly.

W. CLEMENT LEY.

Ashby Vicarage, Lutterworth.

METEOROLOGICAL OBSERVATIONS.

To the Editor of the Meteorological Magazine.

SIR,—Having seen in your last issue a communication from "J. D. P." respecting "accurately recording Meteorological Observations, I beg to offer the following remarks.

1. (*Schonbein's Ozone Papers.*) I have used, and am now using, both "Moffat's and Schonbein's tests, and find, like "J. D. P.," the papers in both instances to colour differently from the numbered colours. I have had "Moffat's" tests colour when "Schonbein's" have remained quite white (both suspended in same cage and for same length of time).

Schonbein's are always either spotted or mottled, whereas Moffat's colour quite evenly. I can recommend to all ozone observers a book by Dr. Cornelius Fox, "Ozone and Antozone" (Churchill and Co.) in which he suggests two tests, one for *ozone alone* and one for estimating the amount of "air purifiers" (ozone, peroxide of Hydrogen, and Nitrous acid). This book treats the subject in a very able and exhaustive manner, (Mr. Casella, of Holborn, has promised to procure me some of his tests) and as they appear to be the only reliable ones, I hope they will become generally used. Observations will then become comparable.

2. (*Force of Wind*). I divide mid-way between the numbers on the Beaufort Scale.

3. (*Scott's Instructions.*) There are a number of tables published for reducing barometrical readings, but none seems to agree with the others. *I use Sir Geo. Shuckburgh's* theorem, (vide page 214 Drew's Practical Meteorology, 2nd Ed.) "that the height of a column of air which shall cause a rise of 1 inch of mercury, at a temperature of 32° is 868·5 ft.," this nearly agrees with Scott's, as at 800 ft. elevation temperature 50°, there is only a difference between them of ·005 in., naturally at lower elevations this is *very considerably* reduced. Buchan, (page 19) uses 875·1 ft. as the height to balance 1 inch of mercury at 32°. I think it would be advisable for observers to come to some understanding as to what tables should be employed.

4. *Glaisher's Tables.* I use Regnault's tensions, with "Apjohn's formulæ," although this method is longer, it is *generally*, I find, more accurate.

Respecting a letter from a "Rainfall Observer," at Muswell Hill, with reference to inserting "daily return of rainfall; at Camden Square," in the Monthly Magazine, I trust you will be enabled to

publish such a return in future, as it would be interesting to compare the results day by day.

Apologizing for the length of this,—Yours truly,

KAUFMANN J. MARKS.

14, *Warrington Crescent, Maida Hill, W., 23rd April*, 1875.

P.S. Since writing the above, and with respect to No. 3 "Scott's Instructions," I find the different authorities in computing the barometrical reductions for heights have employed different "co-efficients of expansion," for instance (Drew ·00204,) (Buchan, Laplace ·004,) (Guyot's tables Gay Lussac ·002083,) (Regnault ·002036,) no wonder that the tables differ. The question is, which are we to use?

[As regards the publication of daily rain values, our correspondents have been remarkably silent; the remark in the above letter is the only one (!) we have received. Unless we receive many others we shall assume that there is no *general* desire for it.—ED.]

PROTECTIVE INFLUENCE OF A LAYER OF SNOW.

To the Editor of the Meteorological Magazine.

SIR,—Your correspondent, Mr. Chapman, may probably be interested in the following readings of two spirit thermometers, verified at Kew, one in a louvre stand, the other on the grass. The readings were taken at 9 a.m., the ground in each case being covered with fresh snow.

Date.	Stand.	Grass.	Depth of Snow in inches.	Date.	Stand.	Grass.	Depth of Snow in inches.
Nov. 10	32	32	$2\frac{1}{2}$	Dec. 20	21	25	1
,, 20	33	32	2	,, 21	13	20	$1\frac{1}{4}$
,, 21	30	32	2	,, 22	12	16	1
Dec. 2	32	32	4	,, 26	29	32	5
,, 5	26	29	1	,, 27	11	30	9
,, 8	27	29	$1\frac{1}{2}$	,, 29	14	18	1
,, 10	29	32	6	Jan. 31	22	30	3
,, 12	33	32	$3\frac{1}{2}$	Feb. 13	26	31	$3\frac{1}{2}$
,, 13	33	32	$7\frac{1}{2}$	,, 28	34	32	1
,, 14	18	29	6				

I regret not having put down a maximum and minimum thermometer when the snow first fell: the warmth of a mass of snow must be considerable. The depth in the garden all the winter was $2\frac{1}{2}$ to 3 feet. Before it fell, pansies, auriculas, and delicate garden plants were just coming into bloom, and there was a large bed of spinach. When the snow melted in early March all were as fresh as before it fell, and the pansies in bloom in no time. The wild flowers, too, are out as soon as the snow is gone, sometimes, as in the case of crocuses and snowdrops, pushing through the snow; indeed, at this moment, on the higher grounds, the snowflake (Leucojum vernum) is blooming abundantly, in some cases having forced its bloom through 5 inches of snow.—Yours truly,

MICHAEL FOSTER WARD, F.M.S.

Rossinière, Canton Vaud, 20th April, 1875.

METEOROLOGICAL OBSERVATIONS AT ROSSINIÈRE.

Lat. 46° 28′ Long. 7° 5′ E.

Monthly Means of Meteorological Observations taken at Rossinière, Switzerland, 3019 *ft. above sea level.*

1874.	Daily mean of Bar. red. to 32° Fah.	Thermometers. Extremes. Max.	Min.	Grass.	Means. 9 a.m.	Max.	Min.	Grass.	Days on which Ther. fell to or below 32	15	10	5	0	Days on which Ther. did not go above 16	20	32	Cloud 0—10	Absolutely cloudless days.	Rain Gauge. inches.	No. of days on which R or S fell.	No. of TSS
March	27·116	67°	3°	— 2°	34·4	48·6	25·0	20·5	24	6	2	1	...	...	...	...	3·6	13	2·240	13	...
April.....	26·851	75	28	19	49·4	60·6	35·2	30·8	7	...	...	...	...	...	...	...	4·1	10	2·642	13	8
May.....	·848	81	25	22	48·6	58·4	34·4	31·4	16	...	...	...	..	...	...	...	4·7	7	4·060	19	3
June.....	27·060	86	37	35	60·8	71·3	46·7	43·5	...	...	...	...	...	...	..	..	4·0	12	8·710	16	11
July.....	·038	89	44	42	67·5	76·8	52·8	50·3	...	...	...	...	...	...	...	...	2·8	18	9·860	17	13
August.....	·023	76	40	36	60·3	66·9	45·9	43·2	...	...	...	...	...	...	...	...	2·8	23	5·220	9	4
September.	·073	80	34	31	57·7	67·1	45·5	42·4	...	...	...	...	...	...	...	...	1·7	18	1·980	6	...
October.....	·025	68	24	21	43·4	56·1	36·6	32·7	9	..	...	...	...	...	...	...	3·3	15	3·150	7	...
November.	26·880	56	2	— 4	29·2	38·7	23·1	18·7	30	7	4	2	...	...	...	...	3·7	17	7·865	12	...
December..	·641	46	—5	— 7	19·9	24·5	15·9	8·8	31	16	10	6	3	8	11	22	5·0	11	6·805	18	...
Jan., 1875.	27·032	52	—7	—10	27·8	35·1	23·4	21·1	23	4	2	2	1	1	1	8	5·5	7	6·515	16	...
February...	26·792	44°	—5°	— 7°	19·5	31·8	13·7	11·1	28	17	10	6	3	...	...	16	4·3	13	1·105	9	...
	26·948	...	...	...	43·2	52·9	33·2	29·5	168	50	28	17	7	9	12	46	3·8	164	60·152	155	39

M. F. WARD.

[The above Table is a continuation of that given in Vol. ix., p. 38, and should also be compared with the translation of Prof. Dufoure's paper on p. 65 of the same volume.—Ed.]

REVIEWS.

Climatologie de la ville de Fécamp, ou résumé général des observations météorologiques faites en cette ville, 1863 *à* 1872. Par. E. MARCHAND, Pharmacien, &c. Le Havre: Lepelletier, 1874. 8vo.

M. MARCHAND has been a careful meteorological observer during twenty years; at the end of the first ten he published a summary of the results he had obtained, in the present work he gives an abstract of the second ten years' observations, but incorporates also the previous series. We are inclined to think that this second series is superior to the first, and is in many respects of considerable value.

A few words are requisite respecting the position of Fécamp and the situation of the instruments, but not many.

Fécamp is in the N.W. of France, in lat. 49° 45′ 24″ N. and long. 0°22′ E., and is therefore on the coast of the channel opposite Beachy Head; the observations were made in a garden in the centre of the town, the rain gauge was about 3 ft. above the ground, and about 65 ft. above mean sea level. The thermometers were good ones and their zeros were verified several times each year; they were 4 ft. above the ground, 7 in. distant from the external wall of an open coach house, running from N.W. to S.E., and forming with another wall of which the direction is prolonged towards S.E. an angle of 90° at 2 ft. 6 in. from the instruments. This wall is 12 ft. high. It is very desirable that M. Marchand should publish a series of simultaneous observations of the thermometers which he has hitherto used, and of either M. Renou's *thermomètre fronde* or of a thermometer on an ordinary French thermometer stand.

As the best mode of determining the mean daily temperature at stations of the second order (*i.e.* where two or more sets of observations are made daily) is still a debated point, we translate the paragraphs which refer to this subject.

"The thermometers are read daily at 6, 7, or 8 a.m., (according to the season) at noon, at 6 p.m., and at 10 p.m. The min. is read at noon, and the max. at 6 p.m.

"The mean daily temperature is determined by three different methods."

"(1.) By taking the mean of all the observations, except the max. and min.

"(2.) By taking the arithmetical mean of the max. and min.

"(3.) By the method indicated by Kaemtz, *Cours Complet de Météorologie p.* 21*, that is to say by multiplying the mean range by the following co-efficients, and adding the product to the mean min. temperature :—

* Walker's Translation, p. 23.

January.....	0·507	May	0·459	September...	0·433
February ...	0·476	June	0·453	October	0·447
March	0·475	July	0·462	November...	0·496
April	0·466	August	0·451	December ...	0·521

As probably few of our readers are familiar either with these co-efficients or with their effects, it will be well to go rather fully into the subject. And, first, let us try to make clear to every one, precisely what these figures imply. Any one who will read method (3) carefully, will see that if the tabular numbers were 0·500 the result of their employment would be *nil* or, rather, it would be just the same as the result of method (2). Example:—

Mean maximum temperature	60°
,, minimum ,, ...	40°
,, range of ,, ...	20°

Method (2)		Method (3) with assumed factor.		Method (3) with true factor.	
Mean max.....	60°	Mean range.....	20°	Mean range	20°
,, min.....	40°	Factor assumed ...	0·500	Factor (for April)...	0·466
	2)100		10·000		9·320
		Add mean min. ...	40·0	Add mean min. ...	40·0
Mean of M. and m.	50°				
		Mean by method (3)	50°0	Mean by method (3)	49·320

We, therefore, find that the effect of these factors is to give values slightly higher than the arithmetical mean in January and December, and considerably lower in the summer and early autumn. On the mean of the year the factor is 0·470, and this (as a little calculation will prove) is equal to a reduction of 0°·3 for each 10° of mean daily range. Therefore, practically, the matter amounts to this, that the mean obtained by the use of Kaemtz's factors is about 0°·3 lower than the arithmetical mean of the max. and min. Our readers will recollect that Table VI. of the old, and Table IV. of the new edition of Glaisher's Diurnal Range Tables gives a series of subtractive corrections, except for December. The mean of Glaisher's corrections is, however, greater than that given by those of Kaemtz's—in short, we have, if we take M. Marchand's mean values:—

Mean of 4 observations (daily)	50°·13
,, of max. and min.	50 ·16
,, ,, ,, with Kaemtz's corrections	49 ·85
,, ,, ,, ,, Glaisher's ,,	49 ·08

Which of the three plans is correct we do not know, perhaps, before the Greek Calends the Meteorological Committee will work up the results of all their thermographs, and thereby throw some light upon the question.

We must proceed to give a tabular abstract of the principal data, and shall subsequently call attention to some of M. Marchand's general remarks.

Abstract of Meteorological Observations at Fécamp.

Date.	Mean pressure.	Temperature 1853–72.							Rain.	Cloud.
	1864—72 10 a.m., noon, 4 p.m., midnt	Mean Max. and min	Absolute Max.			Absolute Min.				
	in.	deg.	deg.	Year.	Day.	deg.	Year.	Day.	in.	0—10
Jan. ...	29·856	38·7	59·2	1864	21	9·9	1871	5	3·07	6·7
Feb....	·940	40·5	61·5	1870	28	16·3	1864	7	1·51	6·3
March	·817	42·9	64·8	1871	24	22·8	1865	21	2·25	6·2
April..	·946	48·8	77·5	1861	17	28·2	1864	9	1·90	5·8
May ...	29·917	53·3	84·7	1868	19	32·4	1872	5	2·53	5·3
June...	30·015	58·5	90·3	1858	15	38·7	1869	12	2·07	5·3
July ...	29·947	61·8	92·7	1869	20	41·5	1863	19	2·35	5·1
Aug....	·948	61·8	89·6	1857	3	40·8	1864	12	2·67	5·2
Sept ...	·923	58·7	83·7	1868	7	36·5	1860	11	3·53	5·3
Oct.	·848	52·8	78·1	1859	5	30·6	1869	30	4·14	6·4
Nov ...	·900	43·8	64·4	1857	3	18·5	1858	23	3·15	6·7
Dec....	29·895	40·5	59·7	1856	7	4·5	1859	20	2·89	7·1
Year...	29·913	50·2	92·7	1869	...	4·5	1859	...	32·16	5·9

(To be continued).

Cardiff Naturalists' Society. Report and Transactions, vol. v. 1873. Cardiff "South Wales Daily News" Office. 8vo. 106 p.p.

It is some years since we drew attention to the progress of this Society, and as it has gone on steadily and prosperously in its career of usefulness, there is not even now very much to be said. The president of the year, Mr. W. Adams, C.E., F.G.S., inaugurated the session with a soirée and exhibition of curiosities of science and art, antiquities, &c. The Society, also, started a series of lectures on Science and Literature, and succeeded in rendering them a financial success, an unprecedented phenomenon in Cardiff, we believe. Eleven papers were read before the Society during the session, several of them of more than average merit, *e.g.*, "Impressed Limestone Pebbles, as illustrating a new principle in chemical geology," by H. C. Sorby, F.R.S.; "The Ancient Iron works of Tintern," by W. Adams, C.E., and "Six-monthly Flora of Cardiff and Neighbourhood," by Miss Ollivant—from whose good paper we must cull one paragraph even at the risk of being unpolite. And if, as is quite right, reviewers judge literary and scientific work on its own merits, and independently of the sex of the writer, if under these conditions a lady earns and receives praise for good work, she must not object to supplying a little harmless fun by our calling attention to the remarkable grammatical or horticultural phenomenon recorded in the following paragraph. We have underlined the puzzling words:—

"In a garden, opposite the Mumbles, might be seen some time back a plant of the Hedera Chrysocaropa—yellow-berried ivy—which is stated by botanists

only to grow at Rome, Naples, the Island of Scio, and at Constantinople, on that part of the wall where the Turks entered the city, A.D. 1463. No one can positively account for the presence of this plant in Glamorganshire; but an ancestor of the garden, in 1851, was a traveller, and fond of his garden when at home. He may, possibly have brought the plant from one of the four places named above; other plants have since been propagated from the one in this garden at the Mumbles."

The Meteorological department of the Society's work is efficiently conducted by Mr. F. G. Evans, F.M.S., &c., and embraces seventeen stations, ranging in altitude from 35 ft. to 730 ft., and in rainfall in 1873, from 32·88 in. at Cardiff to 84·59 in. at Treherbert. We notice one station which has in some mysterious manner failed to find a place in *British Rainfall*. We hope in another year to see Glyncorrwg in its proper place in that publication.

BOOKS RECEIVED.

AUSTRALIA.

ELLERY, R. L. J. Esq. "Observations in Meteorology, Terrestrial Magnetism, &c., at Melbourne Observatory, January—August, 1874."

AUSTRIA.

JELINEK, C., und F. OSNAGHI. "Jahrbucher der K. K. Central-Anstalt für Meteorologie und Erdmagnetismus, Jahrgang, 1872." 4to. Vienna, 1874.

BARBADOS.

RAWSON, Governor. "Rainfall in Barbados, October, 1874—January, 1875." Fcap. folio.

BELGIUM.

"Annales de l'Observatoire Royal de Bruxelles, March and April, 1875." 4to.
QUETELET, M. E. "Note sur la Température de l'Hiver, de 1874—1875." 8vo.

CANADA.

KINGSTON, Prof. G. T. "General Meteorological Register for the year 1873." Magnetical Observatory, Toronto. 8vo.

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APRIL, 1875.

Div.		STATIONS. [The Roman numerals denote the division of the Annual Tables to which each station belongs.]	RAINFALL. Total Fall.	Difference from average 1860–5	Greatest Fall in 24 hours. Dpth	Date.	Days on which ·01 or more fell.	TEMPERATURE. Max. Deg.	Date.	Min. Deg.	Date.	No. of Nights below 32° In shade	On grass
			inches	inches.	in.								
I.	ENGLAND.	Camden Town	1·53	+ ·40	·66	8	10	74·0	21	29·3	25	3	8
II.		Maidstone (Linton Park)	1·38	+ ·16	·75	9	9	76·0	20	27·0	25	5	...
,,		Selborne (The Wakes)	1·74	+ ·24	·44	6	12	68·0	21	24·0	25	9	13
III.		Hitchen	1·58	+ ·58	·64	8	11	64·0	28	26·0	22	9	...
,,		Banbury	2·13	+ ·97	·73	7	10	69·0	20	27·0	14	2	...
IV.		Bury St. Edmunds (Culford)	1·05	+ ·30	·41	8	7	69·0	21*	25·0	22¶	9	10
V.		Bridport	1·07	— ·41	·21	8	10	60·9	20†	27·0	25	5	..
,,		Barnstaple	2·16	+ ·15	·47	7	11	74·0	21	35·0	25	...	...
,,		Bodmin	2·13	+ ·43	·45	4	13	68·0	19	34·0	2	0	4
VI.		Cirencester	1·98	+ ·69	·52	7	9	...	...	...	...	...	...
,,		Shifnal (Haughton Hall)	·66	— ·49	·25	6	6	63·0	19	27·0	14	6	9
,,		Tenbury (Orleton)	1·14	— ·40	·30	6	8	72·8	20	27·2	14	5	11
VII.		Leicester (Belmont Villas)	1·23	...	·33	7	9	73·2	20	29·0	23	2	...
,,		Boston	·43	— ·54	·14	9	7	73·0	20	30·0	14¶	4	...
,,		Grimsby (Killingholme)	·33	...	·11	7	8	67·0	20	31·5	14	1	...
,,		Derby	...	...	...	...	...	...	...	...	...	...	...
VIII.		Manchester	·90	— ·86	·28	6	6	76·0	19‡	28·0	14	2	3
IX.		York	·44	— ·66	·19	4	4	73·0	20	30·0	14	1	...
,,		Skipton (Arncliffe)	3·01	— ·03	1·08	3	9	...	...	...	...	...	...
X.		North Shields	·76	— ·55	·21	8	9	65·0	29	31·8	14	1	...
,,		Borrowdale (Seathwaite)	4·53	— 2·37	2·19	2	6	...	...	...	...	...	2
XI.	WALES.	Cardiff (Ely)	2·68	+ ·75	·63	5	10	...	...	...	...	...	...
,,		Haverfordwest	2·77	+ ·91	·80	4	12	68·6	20	30·0	22	5	...
,,		Rhayader (Cefnfaes)	...	...	...	...	...	...	...	...	...	..	16
,,		Llandudno	·94	— ·56	·30	4	6	70·0	19	35·0	14	...	...
XII.	SCOTLAND.	Dumfries (Crichton Asylum)	1·26	...	·33	3	8	69·8	20	27·4	22	1	...
,,		Hawick (Silverbut Hall)	·97	...	·29	27	8	...	...	...	...	...	4
XIV.		Kilmarnock (Annanhill)	·92	...	·33	2	9	67·2	21§	27·5	22	1	...
XV.		Castle Toward	1·15	— 1·35	·45	3	6	67·0	20	...	...	3	10
XVI.		Leven (Nookton)	·76	— ·49	·16	5, 27	8	72·0	20	29·0	22	3	...
,,		Stirling (Deanston)	...	...	...	...	...	...	...	...	...	...	19
,,		Grandtully	2·17	...	·31	6	10	...	...	...	...	...	...
XVII.		Braemar	1·25	— ·15	·32	5	11	68·4	20	27·0	22	10	...
,,		Aberdeen	1·55	...	·64	5	9	76·2	20	33·1	17	0	25
XVIII		Loch Broom	1·84	...	·66	5	11	...	...	...	...	...	6
,,		Portree	2·91	— 2·36	1·39	2	11	...	...	...	...	...	...
,,		Inverness (Culloden)	·99	— ·48	·24	21	21	71·1	19	31·0	13	2	...
XIX.		Helmsdale	1·84	...	·74	5	12	...	...	...	...	...	19
,,		Sandwick	2·61	+ ·87	·80	28	13	57·9	19	33·6	13	0	...
XX.	IRELAND.	Caherciveen Darrynane Abbey	3·12	...	1·00	4	9	...	...	...	...	...	8
,,		Cork	1·09	...	·34	25	7	...	...	...	...	...	...
,,		Waterford	1·50	— ·73	·35	4	9	63·0	20‖	34·0	23	...	...
,,		Killaloe	1·56	— ·57	·52	21	9	75·0	13	28·5	13	...	...
XXI.		Portarlington	·71	— 1·31	·22	7	13	69·5	20	31·0	23	4	...
,,		Monkstown, Dublin	·86	— ·78	·33	26	9	...	...	...	...	...	...
XXII.		Galway	2·19	...	·43	21	9	71·0	19†	32·0	14	1	...
,,		Ballyshannon	1·23	...	·50	26	11	...	...	...	...	...	...
XXIII		Waringstown	·56	...	·39	6	6	75·0	20	28·0	6	9	...
,,		Edenfel (Omagh)	·63	...	·16	6	11	70·0	20	28·0	22	10	19

* And 28, 30. † 21. ‡ 20. § 22. ‖ 29. ¶ 23

+Shows that the fall was above the average; —that it was below it.

METEOROLOGICAL NOTES ON APRIL.

ABBREVIATIONS.—Bar. for Barometer; Ther. for Thermometer; Max. for Maximum; Min. for Minimum; T for Thunder; L for Lightning; T S for Thunderstorm; R for Rain; H for Hail; S for Snow.

ENGLAND.

LINTON.—Some useful R in the second week, otherwise the month a very dry, bright, sunny one, contrasting strongly with the three preceding ones. Frost on the 8th, 14th, 24th, 25th and 26th. Winds mostly N.E.; the heaviest rainfall ·75 on the 9th, being from that direction; bar. usually high. On the whole a fine, bright month, but R much wanted, the ground being very dry, and fears for the future entertained. Cuckoo heard on 15th, being about the average time; nightingale not heard till the 19th, which is late.

SELBORNE.—Vegetation in fields and gardens much retarded by cold and drought. Total rainfall in 3 months, 5·24 in.; frequent frosts on the grass. Swallow first seen on 18th, and cuckoo heard on 19th.

BANBURY.—High wind on the mornings of the 5th and 9th, and night of 8th.

CULFORD.—Another month of dry, cold weather, with a prevalence of E. winds during 20 days; the rainfall has been little more than 1 in., and fell on seven days. Mean temp. of the month 46°·5. Swallows first seen on 19th; nightingale first heard on 21st, and the cuckoo on the 26th.

BRIDPORT.—A very dry month, and vegetation backward, owing to the cold nights and hot days. Cuckoo first heard on 15th; young thrushes fledged on 19th.

BODMIN.—Average bar. 30·01; mean temp. 52°·1.

HAUGHTON HALL.—Another dry, cold month, the most so since 1844, when only ·37 in. of R fell. It was mild till the 5th, when the temp. sank with a sudden fall of bar, bringing slight R for 5 days, with a S.W. wind; cold then continued from N. and N.E., with the exception of four strangely warm days (18th to 21st), till the 22nd, on which day R fell with sleet; after that time to the close the wind varied from N.W. to S.W. The bar., with the exception of the fall above-mentioned, was remarkably steady throughout. Dense fog on the 17th. Vegetation at least a fortnight late; hawthorn not in leaf till the 18th; blackthorn blossom, 19th; wild cherry on 21st. A few sand martins came on the 7th; swallows on 15th; a tortoiseshell butterfly on the 18th; throstle fledged on 26th; cuckoo heard on 23rd.

ORLETON.—Very cold, with a strong wind and a cloudy sky, excepting two or three days, till the 12th; the sky then cleared, and from 13th to 21st there was scarcely a cloud visible, but there was much haze. On the 19th the ther. rose to 70°·7, and on the 20th to 72°·8 in the shade; the remainder of the month was fine, dry, and pleasant. Mean temp. about 2¼° below the average for the month, and was lower than that of any April since 1861. No T heard or L seen. Cuckoo first heard on 17th, and generally heard on 20th; chiff chaff first seen on 21st; damsons in full blossom on 19th, and early cherries on 23rd.

LEICESTER.—R fell each day from 3rd to 10th, after which none fell, with exception of ·05 in. on the 20th. Very fine and warm from the 15th to 20th; mean temp. of month 47°·4. Although there were only two nights with the temp. below 32°·0, there were 16 below 40°·0; bar. high and steady.

BOSTON.—The weather generally dry and cold, with N.E. winds; mean temp. 2° below the average of the last 11 years. Rainfall ·43, the least known in April for upwards of 20 years (the next smallest being in April last year). Since September last, the commencement of the season calculated on for storage purposes, there is a deficiency from the average of ·68. The prevailing winds have been N.E., the winds from this quarter over the average during the last three months. The effect of the Polar winds on the temp. was strikingly shown on the 21st, when, owing to a change in the direction of the wind, the ther. in the sun fell in the course of two hours from 85° to 54°. The thorn in leaf about the 25th; Cuckoo heard on 27th. Owing to the dry weather and cold, frosty nights the pastures are very backward and keeping scarce, but the corn crops all look exceedingly well, and it has been a splended season for working the land. The reports as to the fruit so far appear to be very favourable.

GRIMSBY.—Month remarkably dry; pastures woefully bare; farmers hard set to find food for sheep and cattle. Bar. very steady for the most part; season very backward; good promise of fruit; peach beginning to blossom on 1st; cowslip on 24th; cuckoo flower on 30th; swallow seen on 19th; cuckoo heard 23rd willow warbler arrived on 25th. High tide in the Humber at night on 7th. Temp. fell from 63° to 48° in the forenoon of the 21st.

ARNCLIFFE.—An unusually dry month; vegetation as forward as usual.

NORTH SHIELDS.—TS on 5th.

SEATHWAITE.—No R from the 5th to the close, except on the 26th.

WALES.

HAVERFORDWEST.—A cold month; fine weather for out-door work; splendid seed time. Very hot from 19th to 21st; 22nd a most winterly day, R mixed with sleet, and temp of 24 hours only 34°.

LLANDUDNO.—A dry and most enjoyable month, with much sunshine, 24 days on which no R fell. Swallows seen on the 21st, and the cuckoo on 24th. Difference between dry and wet at 2 p.m. on 19th, 14°; at 10 a.m. on 20th, 15°.

SCOTLAND.

DUMFRIES.—Another very dry month, the rainfall being chiefly at the commencement. The prevailing wind was E. and N.E., but the mean temp. was pretty high, 46°·29, exactly the same as last year, and 7°·5 above that of last month. Gale from S.W. on night of 4th; sleety showers and S on the hills on 7th.

SILVERBUT HALL, HAWICK.—A dry month, with cold E. winds. There is a fine promising appearance of fruit, the trees in orchards, gardens, and on walls are literally covered with blossoms. The country, though now looking very lovely, shows a want of R.

ANNANHILL.—Bar. pressure less than last month, and mean temp. 5°·8 higher. Rainfall deficient; prevailing winds W. and S.W.; strong S.W. gale on 3rd; gales also on the nights of 2nd and 4th, the rest of the month calm. H fell on the 6th, and much frost registered during the month. Ozone better developed, the tests recording the max. on two occasions under S.W. winds. Several of the evenings cloudless; the day skies mostly cloudy.

CASTLE TOWARD.—Notwithstanding the stormy winter and backward spring, with all the evil forebodings, agricultural operations have passed harmlessly and satisfactorily; work well advanced; pastures, and grass for Hay, look well; turnips here slice plentiful; great promise of fruit. As a whole the month has been all that could be desired; the 18th, 19th and 20th were very warm, the ther. ranging from 66° to 67°; but some of the mornings were cold, and on the morning of the 22nd we had hoar frost, and temp. of 24°. Butterflies were seen during the second half of the month, as well as young blackbirds.

BRAEMAR.—Fog on 14th, 15th, and 16th. Though the frost has been rather severe the month has been a most favourable one for agricultural and horticultural purposes. Lunar halo on 16th.

ABERDEEN.—H on 6th, 23rd with S and heavy, with T and L at 2.15 p.m. on 27th; bar. pressure and temp. above the average, rainfall rather below it. A month of very fine, dry weather; the temp., though on the whole high, has been marked by sudden changes.

LOCH BROOM.—The most beautiful and favourable April ever seen in this remote region; every thing is in a state of forwardness, and the prospect for the future is most encouraging—man and beast, things animate and inanimate, all rejoice in this smiling weather.

PORTREE.—A very fine month for all out-door work—the farmers never had better weather for laying down all kinds of crops; vegetation is making rapid progress; trees and shrubs bitten by the March frost are now fast recovering from its effects. The young lambs are thriving well and appear to be very numerous.

CULLODEN.—Fog very frequent from 10th to 19th. H on 6th. Horse chesnut in leaf on 10th; pear, cherry, gooseberry and currant in bloom; and plane in

leaf on 12th; larch on 15th; birch on 19th; and lime on 28th. Barley sown on 12th; plums in flower on 20th; and elm on 26th.

SANDWICK.—April was remarkably fine, the weather for a considerable time being as warm and pleasant as Midsummer. The rainfall was raised above the average by the heavy fall on the 28th. Aurora was seen only on one night (7th), and now the nights are too light to allow of their being seen till August.

IRELAND.

DARRYNANE.—Early part and last few days wet; from 3rd to 7th the fall of R was 2·32, no more fell till the 25th, the interval being fine and bright with easterly winds. The R at the end of the month was much wanted, as vegetation was very backward. Cuckoo heard on 26th, and corncrake on 28th.

MONKSTOWN.—An eminently dry April, resembling those of 1864, 1870, and 1873; dry weather prevailed from the 8th to the 19th; hazy, with bright sun and cold easterly winds.

BALLYSHANNON.—The month has been one of exceptional dryness, R falling on 11 days only; this has retarded vegetation, which, however, has now actively commenced, and the season promises to be very favourable to the farmers. The temp. has been more like that of June than April.

WARINGSTOWN.—Very dry; crops looking well, though in want of R.

SUPPLEMENTARY TABLE OF RAINFALL IN APRIL, 1875.

[For the Counties, Divisions, Latitudes, and Longitudes of these Stations, see Met. Mag., Vol. X., p. 28.]

Station.	Total Rain.	Station.	Total Rain.
	in.		in.
Acol	1·33	Gainford	·84
Hailsham	1·10	Shap	1·55
Strathfield Turgiss	1·41	Llanfrechfa	3·15
Addington	1·96	Castle Malgwyn	2·07
Oxford	1·24	Heyope	...
Cambridge	1·07	Melrose	·72
Sheering	1·39	Cessnock, Glasgow	1·29
Ipswich	1·14	Gruinart	1·68
Diss	1·02	Keith	1·38
Swaffham	·88	Strathconan	2·57
Compton Bassett	1·51	Springfield, Tain	1·03
Hessary Tor, Dartmoor	3·03	Skibbereen	1·53
Teignmouth	1·55	Fermoy	1·92
Torrington	2·30	Kilrush	1·67
Falmouth	...	Kilkenny	·90
Taunton	1·56	Kilsallaghan	·91
Cheadle	·43	Twyford, Athlone	1·35
Ashby de la Zouch	·82	Ballinasloe	...
Coston, Melton Mowbray	1·18	Kylemore	3·76
Bucknall	·48	Bangor	2·12
Mansfield	·91	Carrick on Shannon	1·22
Walton, near Liverpool	·61	Warrenpoint	·52
Broughton-in-Furness	1·81	Bushmills	·43
Stanley, Wakefield	·48		